

22 September 1980

Research and Development

SAMTO LAUNCH OPERATIONS STANDARDS

This regulation defines the general philosophy for field operations management of activities which are under the control of the Space and Missile Test Organization (SAMTO). It outlines the basic standards for launch operations and support deemed necessary to maximize the probability of mission success for the ballistic missile and space programs at both the Eastern Space and Missile Center (ESMC) and the Western Space and Missile Center (WSMC). This support encompasses all program activities provided by SAMTO and subordinate units, from program conception and activation through the operational phase to deactivation. Range operations standards are addressed in SAMTOR 55-3.

1. INTRODUCTION

a. Organizational Relationships. The integration of all agencies involved in field test and launch operations requires a full-time, in-place Air Force test team responsive to the program offices and other test agencies. The Space and Missile Test Organization (SAMTO) is designated the field operations manager for Space Division (SD) programs (ref. SDR 23-1 and applicable MOAs) and, when designated, the test support agency for the Ballistic Missile Office (BMO) and other programs. The specific responsibilities of SAMTO, Eastern Space and Missile Center (ESMC), and Western Space and Missile Center (WSMC) are specified in published directives, regulations, manuals, plans and Memoranda of Agreement.

b. SAMTO Standards. SAMTO will operate in accordance with proven principles which have evolved over many years and have been refined by experience in developing and conducting launch operations for numerous ballistic missiles, space boosters, payloads and other special programs. These principles have been proven by the test of time and have resulted in a significant record of mission success, but will be carefully refined with new experience and technology. To effectively implement these operating principles, SAMTO, ESMC and WSMC will translate these basic operating standards into all regulations, directives and agreements for those functions for which they are responsible. The application of these standards will maximize the probability of mission success. The major basic principles which must be incorporated in these standards are:

(1) Early involvement by SAMTO organizations in each program provides the user a solid foundation of launch operations experience during the program development phase and assures that the system contract and design provide for adequate field verification of system readiness.

No. of Pages: 9
OPR: DOS
Approved by: Col Boyland
Editor: Ms Gunter
Distribution: F; X

(2) Close scrutiny of technical and management detail during design and qualification testing reduces the quantity and impact of unforeseen problems experienced during site activation and operations phases.

(3) Utilizing sound operations management concepts which have been successfully tested by experience on multiple programs greatly improves the probability of total mission success.

(4) Memoranda of Agreements with the accountable program offices are necessary to clearly define and document responsibilities and authorities.

(5) Centralized integration of field operations for all agencies and contractors is necessary to assure test readiness and preclude unnecessary omissions or duplications.

(6) Identification of key positions in the test management function of SAMTO organizations and delegation of appropriate authority to these positions provides a single line of responsibility for each program.

(7) Indepth training and certification programs assure all personnel assigned to key positions possess or acquire the broad base of experience necessary to perform the functions of their assigned positions.

(8) Total commitment to all aspects of safety from the earliest stages of planning and preparation through post-launch activities and strict adherence to safety guidelines minimizes the chance of an accident, incident, or deficiency, and reduces the possibility of injury to personnel or damage to equipment, should such occur.

(9) Maintenance of an indepth security program at all SAMTO organizations to provide an overall level of security that will meet the individual requirements of each program.

c. Exceptions to Standards. Exceptions to established philosophy and requirements must be reduced to an absolute minimum. It is understood that certain hardware configurations and certain mission requirements, may require deviations from established operating standards. Deviation from SAMTO operations standards, as defined herein, require review by SAMTO, Directorate of Operations. Significant deviations require approval by the SAMTO Commander. Authority to deviate from operating standards of other regulations is defined in those documents.

d. Supporting Documentation. A listing of the major documents which provide additional information on the implementation of the basic policies defined in this regulation are identified in the Reference Document Matrix (Fig. 1). It is not intended to be a complete listing.

e. Changes. Updates or improvements to the launch operations standards defined herein may be recommended by all levels of command and submitted to SAMTO/DO for consideration and further action.

2. MANAGEMENT

a. Field Operations Management and Test Control.

(1) SAMTO is directly subordinate to SD and acts as the SD launch agency to manage and support space systems checkout and launch operations (ref. SDR 23-1). In addition, SAMTO provides similar support to the BMO for ballistic missile launches and to other DOD and non-DOD programs. Activity provided by SAMTO organizations will be specifically delineated in appropriate MOAs or other documentation.

(2) As launch agency SAMTO will implement and manage all launch base functions of the program contracts as specifically stated in the appropriate MOAs and enabling clauses of contractual documentation. If contractor tasking is required that may be contractually out-of-scope or that may require additional funds, then formal direction to that contractor must be made by the cognizant contracting officer, in coordination with the program office.

(3) Specific key positions, such as SAMTO Test Manager (STM) and Test Director (TD), are required within SAMTO to focus the responsibility of field operations management to a single operational manager.

Other key positions are required to further delegate critical areas of responsibility (for example, Launch Controllers/Program Support Managers/Test Controllers) for all DOD-managed systems or subsystems. These individuals shall respond to the STM or TD, as appropriate. (Ref. SANTOR 30-1).

b. Personnel Qualifications.

(1) All tasks performed within the launch operations management function must be accomplished with the cognizance of a qualified test director. The test director will maintain positive control of all test activity by utilizing highly qualified key personnel, such as test controllers/launch controllers, who have been trained and certified to control or perform particular functions.

(2) Certification training programs shall be developed for each designated key position. These programs shall comply with specific center and group directives and be compatible with established training directives and standards.

(3) ESMC and WSMC will assure that contractor personnel working under SAMTO management and control are appropriately trained and certified per the terms of their applicable contracts.

c. Safety.

(1) Responsibility. Each commander is directly responsible for the safe conduct of all assigned operations assigned to the SAMTO. This responsibility begins at the earliest stages of vehicle design and continues through launch processing to launch/post-launch operations. This responsibility further

22 September 1980

extends to each individual within the SAMTO who exercises field operations management and test control over these operations. The division of responsibility and authority for safety matters for all program participants, government and contractor, will be included in program documentation and the applicable complex or pad safety plans.

(2) Standards. The following safety standards will be met by all programs under SAMTO control:

(a) Test program documentation/hardware/operations will comply with applicable missile flight and ground safety criteria. These criteria are contained in SAMTOR 127-1, Center safety regulations, and the applicable launch complex or pad safety plans.

(b) All hazardous test procedures will be approved by appropriate safety staff or host base safety agencies prior to conduct of such operations.

(c) Required missile flight and ground safety approvals will be obtained. These include Flight Plan Approval, Flight Termination Systems Approval, Missile In-flight Safety Approval, and Missile System Ground Safety Approval.

(3) Potential Safety Problems. All individuals exercising test control over operations will immediately stop operations if proper safety practices are not being followed or if a potential safety problem develops. Operations will not be resumed until such problems are resolved.

d. Security.

(1) Security is a fundamental responsibility of primary importance to every individual within this organization. Each person must understand the purpose and principles of the Security Program and his/her personal responsibility for protecting all categories of information he/she possesses. Each person is expected to be fully aware of security directives pertinent to their particular function, to strictly adhere to such directives and to exercise security responsibilities in a timely and efficient manner.

(2) Physical security of assigned resources is the responsibility of ESMC and WSMC in compliance with existing security directives and agreements. Individual compliance with the directive requirements is vested in each assigned person.

(3) Information security requirements are established by existing AF directives and individual program security guides. Security Offices must impress upon all personnel the importance of understanding the peculiar program information protection requirements in such areas as unclassified launch indicators, photography, and classification authority.

3. OPERATIONS. Total success of space or ballistic missile test missions cannot be achieved without proper integration and control of the activities of the many agencies associated with launch processing operations. To accomplish this, support requirements and organizational interfaces must be clearly defined, and continuously updated during the program life. Memoranda of agreement (MOAs) must be developed between SAMTO organizations and the program offices, and other agencies to clearly define specific roles and responsibilities of each organization. Program contracts must have appropriate enabling clauses in contractual documentation to permit implementation of these roles and responsibilities.

a. Prelaunch Operations. From program introduction through the period of processing of flight hardware, ground support equipment and facilities, appropriate individuals from the centers and test groups will work directly with the program office personnel to assure that the following areas of responsibility receive all possible benefit from the field expertise and experience.

(1) Contract Review: Provide inputs to the program office during Statement of Work (SOW), Contract Data Requirements List (CDRL), and Request for Proposal (RFP) preparation to assure that field operations management and test control provisions have been adequately addressed.

(2) Proposal Review: Provide inputs to the program office for all proposals involving contractor operations to assure that all operations are feasible and that requested support is available or can be provided. Provide technical expertise to the program office during proposal evaluation, fact-finding and negotiation.

(3) Design Review: Provide thorough review of proposed system design and attend significant system design reviews in support of the program office. Assure that all designs are compatible with field test facilities, meet established safety criteria, meet interface requirements, and that proposed systems are able to provide the appropriate data to determine launch readiness.

(4) Test Planning: Assure that all test support and systems to be tested at the launch site are defined early in the program and that logical test flows are developed to assure end-to-end test of all critical systems as near to flight configuration as possible. Appropriate simulated components must provide the capability to conduct system verification, practice countdowns, simulated flight, and system retest after component failure and replacement.

(5) Factory Testing: Assist the program office in the definition, conduct, and evaluation of factory acceptance testing. During definition, determine mission critical functions not testable in the field and identify these functions to the program office as mandatory factory acceptance requirements. When possible, witness conduct of key tests. During evaluation, verify adequacy of factory acceptance test results as a baseline for field testing.

b. Launch Operations. From the arrival of mission related equipment (flight, ground support and facility), positive control will be maintained over all individual activities to successfully manage the integration of the numerous activities of the many programs at the launch base. The key personnel assigned to each program will accomplish the following activities:

(1) Test Preparation: Assure that all required support, equipment configurations, program documentation and system test procedures meet program requirements and are properly approved prior to granting approval to commence launch base testing.

(2) Interface Testing: Assure that the interfaces between systems are verified by the best means possible, both before and after mating at the interface. Integrated testing of systems must be in as near operational or flight configuration as is technically possible and performed as close to launch as practical.

(3) Procedures: Each program has certain unique requirements which must be verified in the field. All operations are strictly controlled by test procedures which will be formally approved by Center and/or Test Group personnel prior to use. All procedures will be thoroughly reviewed by affected contractors and AF operations, engineering, safety and quality assurance personnel prior to approval.

(4) Test Control: The Centers and Test Groups, through the assignment of key personnel for each program, will maintain positive control of test conduct, scheduling, system configuration and integrity and compliance with technical, procedural, safety, quality assurance and security standards. The installation and test documentation for all system modifications will be reviewed and approved prior to installation and verified before use. When a system failure occurs, the test controller will assure that the system is safe and configuration is maintained to preserve the failure mode, and then will assure proper approval of all troubleshooting and repair procedures, retest data, engineering analysis/failure analysis and system revalidation prior to proceeding with on-line testing.

(5) Validation of Objectives: System integrity shall be maintained until test data is analyzed and compared with predetermined test objectives and until test success is validated. No flight components shall be flown with an outstanding unverified failure except in extremely unusual circumstances. When components fail and the failure mode cannot be identified or confirmed, validation of flight worthiness will not be made by the Test Director and Program Office personnel until after replacement of all possible contributing components and successful system retest. Exceptions may be granted only by the Program Director and the SAMTO Commander (para 1c). The validation of objectives and the status of any unverified failure investigations will be reported in readiness reviews.

(5) Validation of Objectives: System integrity shall be maintained until test data is analyzed and compared with predetermined test objectives and until test success is validated. No flight components shall be flown with an outstanding unverified failure except in extremely unusual circumstances. When components fail and the failure mode cannot be identified or confirmed, validation of flight worthiness will not be made by the Test Director and Program Office personnel until after replacement of all possible contributing components and successful system retest. Exceptions may be granted only by the Program Director and the SAMTO Commander (para 1c). The validation of objectives and the status of any unverified failure investigations will be reported in readiness reviews.

(6) Launch Support Integration: The assigned key personnel will closely coordinate all facets of launch operations to assure that proper integration of the booster vehicle, payload, launch facilities, range support, and worldwide mission support (for example, AFSCF) is continuously accomplished throughout the life of any program.

c. Post Launch Operations. Following each launch, the appropriate personnel will:

(1) Submit required launch notification messages.

(2) Review collected data and provide inputs to the program offices on the achievement of pre-determined test objectives.

(3) Submit required post launch reports.

(4) In the event of a system anomaly or mission failure, take appropriate action to submit any required messages/reports, conduct the launch base investigation and to participate fully with any formal investigation teams.

(5) Conduct a post launch critique and document action items on problem areas encountered during the launch cycle.

4. READINESS ASSESSMENT. To assure maximum system effectiveness in support of mission objectives, a standard approach shall be used for determining the launch readiness of missile and space programs for which SAMTO is the designated launch agency. This approach shall provide continuous monitoring of daily operations, incremental reviews for major milestones and formal readiness reviews for mission and launch readiness determination. (Ref. SAMTOR 800-1/SDR 800-12). Each Test Group will document a standard approach to readiness of all assigned programs in a Flight or Launch Test Readiness Plan.

22 September 1980

5. LESSONS LEARNED. Common to the successful conduct of all launch operations is the need to ensure maximum benefit is derived from the experiences of others. A responsive Lessons Learned program in launch operations is especially significant in establishing a documented corporate memory of problems encountered in a variety of launch programs and the actions taken to successfully resolve them. The system to achieve this end is defined in AFSCR 800-10 and the SD/SAMTO supplements thereto, which state the policies, procedures and responsibilities for implementing and maintaining the program. Significant items from Working Groups, Readiness Reviews, Problem Summaries and Post Launch Critiques are excellent sources for program inputs. Active participation by personnel at the working level is the key to a responsive and productive Lessons Learned Program.

OFFICIAL

WILLIAM T. TWINTING
Brigadier General, USAF
Commander

JAMES A. ROYAL, TSgt, USAF
Chief of Administration

SANTOR 55-2 Functional Topics	Supporting Directives	SANTOR 11-1 Agreements	SDR 23-1 SANTO	AFSCR 55-1 Command Post	SANTOR 80-1 Test Mgmt	SANTOR 127-1 Safety	AFR 205-X Security	SANTOR 550-2 Opn Mgmt	SDR 550-15 Mission Readiness	SANTOR 800-1 LncH Read Rev	SANTOR 800-3 Mgmt Control of Contractors	AFSCR 800-10 Lessons Learned	SDR 800-12 MRR Process	Memorandum of Agreements	Security Class. Guides	SANTO Chart Book
Organization & Functions	X	X		X	X	X	X	X	X	0		0	X	X		X
Communications		0	X			0	X		0	X		0	0	X	X	
Agreements	X		X		X	X	X						0	X	0	
Field Operations Management		X	0	0		0	0	0		X				X	0	0
Contract Management	0							0			X			X	0	0
Key Positions	X		X	X	X	X	X	X	X	0	0		0	X		X
Personnel Qualifications					0	0							0	X		
Safety					X				0	0				X		
Security			0			X			0					X	X	
Pre-Contract Activities	0	0				X					X			X	0	
Design Reviews		0		0	0			0					0	X	0	
Test Planning		0		X	0			0			0		0	X	0	
Factory Testing					0			0					0	X	0	
Test Preparation		0		X	0			0			0		0	X	0	
Interface Testing				0				0					0	X	0	
Procedures	0	0	X	0	0	X	0	0	0		0		X	X	0	
Test Control/Surveillance		X	0	X	0			0	X	0	X		0	X	0	
Objective Validation								0						X	0	
Launch Support Integration		0						0	X				0	X	0	
Post Launch Activity		0	X	0	0			0				0		X	0	X
Readiness Assessment		0		0					X	X			0	X	0	X
Lessons Learned					0			X				X		X	0	

X - Specified Requirements

0 - Topic Referenced

Figure 1. REFERENCE DOCUMENT MATRIX (Ref. para 1d)